Kuei-Hsiang Huang

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EDUCATION

Bachelor of Science in Mathematics

National Tsing Hua University, Hsinchu, Taiwan   Sep. 2019 – June. 2023

- Overall GPA: 3.1/4.3
- CS related GPA (43 credits) : 3.77/4.3

Interdisciplinary Program in Data Science

National Tsing Hua University, Hsinchu, Taiwan   Sep. 2019 – June. 2023

RESEARCH EXPERIENCE

Low Rank and Sparse Decomposition on Model Compression

Scientific Computing On Parallel Environment Lab, National Tsing Hua University

-Advisor: Prof. Che-Rung, Lee   Sep. 2022 – Present

- **Implemented optimization** methods to **solve large matrix approximation** problem.
- **Analyzed** the **approximate error bound** and **convergent criterion** for parameter selection in rank and sparsity for model compression hyperparameters.
- Achieved **identical accuracy** for state of the art but with **10% smaller model size** using **model compression algorithm** achieved using low rank and sparse techniques.

Research Assistant

Research Center for Information Technology Innovation, Academia Sinica, Taipei, Taiwan

-Supervised by Dr. Tung Chou   Oct. 2021 – Dec. 2022

- Studied **algebraic attack** on code-based **Post-Quantum Cryptosystems**.
- Studied **FrodoKEM**–quantum-secure **key encapsulation mechanism** from generic **lattices**.
- Derived the mathematical theory of the **LLL algorithm** and **Shortest Vector Problem**.

PUBLICATIONS

Kuei-Hsiang Huang, Cheng-Yu Sie, Jhong-En Lin, and Che-Rung Lee (2024). "LPSD: Low-rank Plus Sparse Decomposition for Highly Compressed CNN Models". In: *Pacific-Asia Conference On Knowledge Discovery And Data Mining*.

WORK EXPERIENCE

AI Engineer Intern

GliaCloud Co., Ltd.   Feb. 2023 – Present

- **Improved** Google Ad revenue by **8%** through the development of a **recommendation system** with **time series model**.
- **Detected anomalies** in revenue data pipelines by developing a **report system** which uses **Azure and Google Cloud services and OpenAI's API**.
- Built a dashboard for revenue visualization, responsible for **frontend to backend** design and **database management**.
- **Found potential traffic violation criterion** on Google Ad by **performing hypothesis testing**.

Teaching Experience

Teaching Assistant of Introduction to Programming I (MATH171002)

Department of mathematics, National Tsing Hua University, Hsinchu, Taiwan   Sep. 2022 – Jan. 2023

- **Reduced the time** for grading from **1.5 hour to 2 seconds** by using **Python script** to **automate grading routine**.
- Designed and graded coding assignments and projects.
- Rated **4.6/5** in **student feedback questionnaires**.

Honors & Awards

Professor Chao-Liang Shen Memorial Scholarship

Department of mathematics, National Tsing Hua University   Dec. 2022

- Award of best improvement in GPA among the junior students in the mathematics department.

Technical Skills

Languages: C/C++, Python, SQL, R, JavaScript, HTML/CSS, LaTeX
Tools: Git, Unix Shell
Frameworks: Django, Pytorch, NumPy, Scikit-Learn, Pandas

Extracurricular Activities

Basketball team of the mathematics department | *Player*   Sep. 2019 – June. 2023

- Attended an inter-college competition annually.

Mathematics Student Association | *Committee Member*   Sep. 2020 – July. 2021

- Held events including department sports day and graduation ceremony.

Statistical Science Camp

Institute of Statistical Science, Academia Sinica, Taipei, Taiwan   Aug. 2022

- Learned modern Variable Selection technique including group variable selection using Bayesian method.
- Acquired knowledge about dimension reduction technique using a supervised method.

International Conference for Statistics and Data Science

Institute of Statistical Science, Academia Sinica, Taipei, Taiwan   July. 2023

- Attended the conference and learned about **Explainable Artificial Intelligence** and other data science studies conducted by researchers from different countries.

Relevant Coursework

CS related Courses: Introduciton to Programming I & II, Introduction to Programming in Python, Linear Algebra I & II, Data Structures, Design and Analysis of Algorithms, Computer Architecture, Operating Systems, Introduction to Computer Networks, Introduction to Convex Optimization, Applied Cryptography, Machine Learning, System Integration Implementation I & II
Applied Mathematics related Courses: Calculus I & II, Advanced Calculus I & II, Discrete Mathematics, Probability Theory, Statistics, Numerical Analysis, Mathematical Methods for Computer Graphic Design, Business Analytics Using Computational Statistics, Statistical Data Analysis, Differential Equations, Complex Analysis